AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of controlling an assembly line, comprising the steps of:

- providing ~~an~~ a moving ~~article~~ assembly line to move a series of articles along a number of processing stations;

- designating a first of the processing ~~station~~stations on the assembly line;

- providing the first processing station with a first length;

- providing an entry signal to be representative of an arrival of an article in the first processing station and/or an exit signal to be representative of a departure of the article from the first processing station;

- delivering a first article to the first processing station;

- providing a designated processing function in the first processing station;

- monitoring the designated processing function on the first article within the first processing station over a first monitoring period according to the entry signal and/or the exit signal;

- being ready to detect in the first processing station, a first condition in which ~~and when~~ the designated processing function ~~in the first processing station~~ on the first article is not ~~completed~~complete within the first monitoring period and

responsive to the first condition:

- issuing a signal to an operator in the first processing station that the designated processing function on the first article is not complete;

- extending the first processing station along the assembly line to allow the operator an additional length portion of the assembly line to complete the designated processing function; and

- monitoring the designated processing function in the extended first processing station over a second monitoring period;

- being ready to detect in the first processing station as extended, a second condition in which the designated processing function on the first article is not complete within the second monitoring period; and responsive to the second condition:~~;~~

~~- and further, when the designated processing function on the first article is not complete in the extended first processing station;~~

- associating a label with the first article for remedial attention; and

- advancing the first article along the assembly line from the ~~extended~~ first processing station as extended.

Claims 2 - 3 (Cancelled)

4. (Currently Amended) ~~A method as defined in claim 1,~~ A method of controlling an assembly line, comprising the steps of:

- providing an article assembly line to move a plurality of articles along a

number of processing stations;

- designating a first of the processing stations on the assembly line;

- providing the first processing station with a first length;

- providing an entry signal to be representative of an arrival of an article in the first processing station and/or an exit signal to be representative of a departure of an article from the first processing station;

- delivering a first article to the first processing station;

- providing a designated processing function in the first processing station;

- monitoring the designated processing function on the first article within the first processing station over a monitoring period according to the entry signal and/or the exit signal;

- detecting a condition in which the designated processing function in the first processing station on the first article is not complete within the monitoring period:

- issuing a signal to an operator in the first processing station that the designated processing function on the first article is not complete;

- extending the first processing station along the assembly line ~~wherein the~~to form an extended first processing station to cause the extended first processing station to ~~extended first processing station~~ at least partially ~~overlaps~~ overlap a second processing station along the assembly line, to allow the operator an additional length portion of the assembly line to complete the designated processing function;

- monitoring the designated processing function in the extended first processing station; and

- advancing the first article along the assembly line from the extended

first processing station.

5. (Currently Amended) ~~A method as defined in claim 1,~~A method of controlling an assembly line, comprising the steps of:

- providing an article assembly line to move a plurality of articles along a number of processing stations;

- designating a first of the processing stations on the assembly line;

-wherein the first processing station is immediately adjacent a second of the processing ~~station~~stations;

- providing the first processing station with a first length;

- providing an entry signal to be representative of an arrival of an article in the first processing station and/or an exit signal to be representative of a departure of the article from the first processing station;

- delivering a first article to the first processing station;

- providing a designated processing function in the first processing station;

- monitoring the designated processing function on the first article within the first processing station over a monitoring period according to the entry signal and/or the exit signal;

- detecting a condition in which the designated processing function in the first processing station on the first article is not complete within the monitoring period; and responsive to the condition:

- issuing a signal to an operator in the first processing station that the designated processing function on the first article is not complete;

- extending the first processing station along the assembly line and~~, the~~

~~designating step including the step of~~ shortening the length of the second processing station as a result of extending the first processing station to form an extended first processing station to allow the operator an additional length of the assembly line to complete the designated processing function;

- monitoring the designated processing function in the extended first processing station; and

- advancing the first article along the assembly line from the extended first processing station.

6. (Currently Amended) ~~A~~ The method as defined in claim 5, further including the step of issuing one or more signals to an operator in the first processing station and issuing one or more signals to an operator in the second processing station, the one or more signals indicating that the designated processing function is not complete.

7. (Currently Amended) ~~A~~ The method as defined in claim 6, wherein the same signal is issued to both the first and second operators.

8. (Currently Amended) ~~A~~ The method as defined in claim 6, wherein the signal is visible and/or audible by both the first and second operators.

9. (Currently Amended) ~~A~~ The method as defined in claim 6, wherein the signal is conveyed, or encoded on a carrier signal which is conveyed, over a wired and/or wireless data link.

10. (Currently Amended) ~~A~~ The method as defined in claim 1, wherein the extended first processing station is returned to its original length ~~geometric size~~ when the designated processing function on the first article is either complete or when the first article is advanced beyond the first processing station along the assembly line.

11. (Currently Amended) ~~A~~ The method as defined in claim 1, wherein the assembly line is a vehicle assembly line.

12. (Currently Amended) ~~A~~ The method as defined in claim 11, wherein the first processing station is a torque theatre.

13. (Currently Amended) ~~A~~ The method as defined in claim 12, wherein the monitoring step includes counting the number of correct torque functions executed in the torque theatre.

14. (Currently Amended) ~~A~~ The method as defined in claim 12, wherein the step of monitoring includes the steps of providing a torque tool and sensing the operation of the torque tool to determine when the torque tool is operating within a first set of predetermined conditions to register a correct torque function and to determine when the torque tool is operating within a second set of predetermined conditions to register an incorrect torque function.

15. (Currently Amended) ~~A~~ The method as defined in claim 14, wherein the monitoring step includes the step of providing a map of torque targets to be hit during a predetermined torque sequence.

16. (Currently Amended) ~~A~~ The method as defined in claim 15, wherein the step of monitoring includes the step of recording the location of the torque tool relative to the map, and storing the location of the torque tool and a predetermined torque condition of the torque tool at each location.

17. (Cancelled)

18. (Currently Amended) An assembly line, comprising:

- a first processing station and a second processing station;

- conveyor means for conveying a plurality of articles along the assembly line and through ~~at least one of~~ the processing stations;

- at least one first processing means for processing an article delivered to the first processing station;

- a first entry signal generating means to issue a first entry signal to be representative of an arrival of an article in the first processing station~~,~~;

- a first exit signal generating means to issue a first exit signal to be representative of a departure of the article from the first processing station;

- first process monitoring means for monitoring a first processing function over a first monitoring period according to the first entry signal and/or the first exit signal;

- at least one second processing means for processing an article delivered to

the second processing station;

- a second entry signal generating means to issue a second entry signal to be representative of an arrival of an article in the second processing station~~,~~;

- a second exit signal generating means to issue a second exit signal to be representative of a departure of the article from the second processing station;

- second process monitoring means for monitoring a second processing function over a second monitoring period according to the second entry signal and/or the second exit signal;

- master monitoring means, communicating with each of the first and second process monitoring means for monitoring the assembly line;

- ~~each of the first and second process monitoring means being operable to determine when the corresponding first and second processing functions have been completed;~~

- each of the first and second process monitoring means being operable to detect a first condition in which the corresponding processing function is not complete;

- each of the first and second process monitoring means being responsive to the first condition ~~and when either process monitoring means determines that the corresponding first or second processing function has not been completed in the corresponding first or second monitoring period, the corresponding process monitoring means is operable~~ to issue a signal to an operator in the corresponding processing station that the corresponding processing function is not complete~~,~~; and

~~- and where either processing function is not complete, the corresponding process monitoring means is operable~~ to extend the length of the travel of the

conveyor means along the assembly line for the corresponding processing station to form an extended processing station for the operator to complete the corresponding processing function;

- the corresponding process monitoring means being operable to monitor the processing function in the extended processing station ~~over the corresponding first or second monitoring period~~ according to the corresponding entry signal and/or the corresponding exit signal; ~~and~~

- the process monitoring means being operable detect a second condition in which ~~when the corresponding process monitoring means determines that~~ the processing function on the article in the extended processing station is still not complete; ~~then~~ the process monitoring means being responsive to the second condition ~~is operable~~ to cause a label to be associated with the corresponding article for remedial attention.

19. (Currently Amended) A method of controlling an assembly line, comprising:

- a step for providing a moving ~~an article~~ assembly line;

- a step for designating a first processing station~~,~~ on the assembly line;

- a step for providing an entry signal to be representative of an arrival of an article in the first processing station and/or an exit signal to be representative of a departure of the article from the first processing station;

- a step for delivering a first article to the first processing station;

- a step for providing a designated processing function in the first processing

station;

- a step for monitoring the designated processing function on the first article within the first processing station over a monitoring period according to the entry signal and/or the exit signal;

- a step for being ready to detect ~~and when~~ a first condition in which the designated processing function in the first processing station on the first article is not complete~~d~~ within the monitoring period,~~:~~ and responsive to the first condition:

- a step for issuing a signal to an operator in the first processing station that the designated processing function on the first article is not complete;

- a step for extending the first processing station along the assembly line to allow the operator an additional length portion of the assembly line to complete the designated processing function;

- a step for monitoring the designated processing function in the extended first processing station;

- a step for being ready to detect a second condition in which ~~and when~~ the designated processing function on the first article is not complete in the extended first processing station; and responsive to the second condition:

- a step for associating a label with the first article for remedial attention;

- a step for advancing the first article along the assembly line from the extended first processing station.

Claims 20-28 (Cancelled)

29. (Currently Amended) A processing system, comprising:

- a first processing station positioned on a moving processing line;

- a conveyor ~~for conveying~~to convey a plurality of articles along the processing line and through the first processing station;

- at least one first processor ~~for processing~~ to process an article delivered to the first processing station according to a first processing function;

- a first entry signal generator to issue a first entry signal to be representative of an arrival of an article in the first processing station,

- a first exit signal generator to issue a first exit signal to be representative of a departure of the article from the first processing station;

- a process monitor ~~for monitoring~~ to monitor the first processing function over a first monitoring period according to the entry signal and/or the exit signal;

- the process monitor being responsive to ~~operable to~~ a first condition in which ~~determine when~~ the first processing function is ~~has been completed, and when the process monitor determines that the corresponding first processing function has~~ not complete ~~been completed, the process monitor being operable:~~, to issue a signal to an operator in the first processing station that the corresponding processing function is not complete~~,~~; and to extend the length of the processing line corresponding to the first processing station to form an extended first processing station for the operator to complete the first processing function;

- the process monitor being operable to monitor the first processing function in the extended first processing station over a second monitoring period according to the entry signal and/or the exit signal;

- the process monitor being operable in the second condition ~~and when the process monitor determines that the~~ in which the first processing function in the extended first processing station is still not complete ~~, the process monitor being operable~~ to cause a label to be associated with the corresponding article for remedial attention.

30. (Currently Amended) A ~~system as defined in claim 29~~, processing system comprising:

- a first processing station positioned on a processing line;

- a conveyor for conveying a plurality of articles along the processing line and through the first processing station;

- at least one first processor for processing an article delivered to the first processing station according to a first processing function;

- a first entry signal generator to issue a first entry signal to be representative of an arrival of an article in the first processing station;

- a first exit signal generator to issue a first exit signal to be representative of a departure of the article from the first processing station;

- a process monitor operable to monitor the first processing function over a first monitoring period according to the entry signal and/or the exit signal;

- the process monitor being responsive to a first condition in which the first processing function is not compete, to issue a signal to an operator in the first processing station that the corresponding processing function is not complete; and to extend the length of the processing line corresponding to the first processing station,

~~wherein~~ the extended first processing station at least partially ~~overlaps~~ overlapping a second processing station to form an extended first processing station for the operator to complete the first processing function;

- the process monitor being operable to monitor the first processing function in the extended first processing station over a second monitoring period according to the entry signal and/or the exit signal;

- the process monitor being operable in a second condition in which the first processing function in the extended first processing station is still not complete in the second monitoring period to cause a label to be associated with the corresponding article for remedial attention.

31. (Currently Amended) ~~A~~ The system as defined in claim 30, the process monitor being operable to shorten the length of the processing line for the second processing station according to the extended first processing station.

32. (Currently Amended) ~~A~~ The system as defined in claim 31, the process monitor being operable to issue one or more signals to an operator in the first processing station and/or one or more signals to an operator in the second processing station, the one or more signals indicating that the ~~designated~~first processing function is not complete.

33. (Currently Amended) ~~A~~ The system as defined in claim 32, wherein the signal is visible and/or audible by both the first and second operators.

34. (Currently Amended) ~~A~~ The system as defined in claim 32, wherein the signal is conveyed, or encoded on a carrier signal which is conveyed, over a wired and/or wireless data link.

35. (Currently Amended) ~~A~~ The system as defined in claim 29, the process monitor being operable to return the extended first processing station to its original size when the first processing function is either complete or when the first article is advanced beyond the first processing station.

36. (Currently Amended) ~~A~~ The system line as defined in claim 29, wherein the first processing station is a torque theatre.

37. (Currently Amended) ~~A~~ The system line as defined in claim 36, wherein the process monitor is operable to count a number of correct torque functions executed in the torque theatre.

38. (Currently Amended) ~~A~~ The system line as defined in claim 37, the first processing station including a torque tool, the process monitor being operable to sense the operation of the torque tool to determine when the torque tool is operating within a first set of predetermined conditions to register a correct torque function and to determine when the torque tool is operating within a second set of predetermined conditions to register an incorrect torque function.

39. (Currently Amended) ~~A~~ The system line as defined in claim 38, further

comprising a display to provide a graphical representation of a map of torque targets to be hit during a predetermined torque sequence.

40. (Currently Amended) ~~A~~ The system line as defined in claim 39, the display being operable to record the location of the torque tool relative to the map, further comprising a data storage unit for storing the location of the torque tool and a predetermined torque condition of the torque tool at each location.

41. (Currently Amended) ~~A~~ The system as defined in claim 29, wherein the processing line is operable to travel along a flow path in a predetermined direction.

42. (Currently Amended) ~~A~~ The system as defined in claim 29, wherein the processing line is operable to travel along a flow path in more than one predetermined direction.

43. (Currently Amended) A method of monitoring the productivity of an operator in a processing station in an assembly line, comprising:

- providing ~~an article~~a moving assembly line;

- designating a first processing station on the assembly line;

- providing an entry signal to be representative of an arrival of an article in the first processing station and/or an exit signal to be representative of a departure of the article from the first processing station;

- delivering a first article to the first processing station;

- providing a designated processing function in the first processing station;

- monitoring the designated processing function on the first article within the first processing station over a monitoring period according to the entry signal and/or the exit signal;

- ~~and when~~ detecting a first condition in which the designated processing function in the first processing station on the first article is not complete within the monitoring period; and responsive thereto~~:~~

- issuing a signal to an operator in the first processing station that the designated processing function on the first article is not complete;

- extending the first processing station along the assembly line to allow the operator an additional length portion of the assembly line to complete the designated processing function;

- monitoring the designated processing function in the extended first processing station;

- detecting a second condition in which~~and when~~ the designated processing function on the first article is not complete, and responsive thereto;

- associating a label with the first article for remedial attention;

- advancing the first article along the assembly line from the extended first processing station;

- recording an incomplete first processing function event.

44. (Cancelled)